Y is C_{2-4}-alkyleneoxy;

T is C_{2-4} alkylene;

A is the residue of a dibasic acid or anhydride thereof;

Z is the residue of a polyamine and/or polyimine;

W is the residue of an oxide, urea or dibasic acid or anhydride thereof;

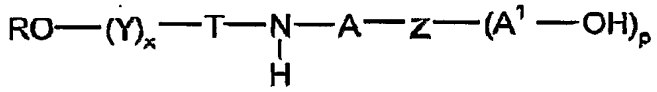
x is from 2 to 60;

subscript 0-v is subscript from 0 to v; and

v represents the maximum available number of amino and/or imino groups in Z which does not carry the group RO-$(Y)_x$-T-NH-A-.

Since Z is the residue of a polyamine and/or polyimine there is preferably more than 2 groups RO-$(Y)_x$-T-NH-A- attached to Z and these may be the same or different.

In the specific case wherein W is the residue of a dibasic acid there is provided a composition comprising a particulate solid, an organic medium and a compound of formula 1a.



Formula 1a

wherein

R, Y, T, Z and x are as defined hereinbefore;

A and A^1 are, independently, the residue of a dibasic acid which may be the same or different; and

p is from 0 to 200.

R is preferably aryl, aralkyl, alkaryl, cycloalkyl or alkyl, which may be linear or branched.

When R is aryl it is preferably naphthyl or phenyl.

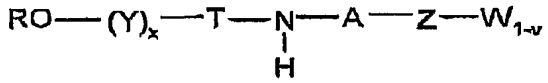
When R is aralkyl it is preferably 2-phenylethyl or preferably benzyl.

When R is alkaryl it is preferably octyl phenyl or nonyl phenyl.

When R is cycloalkyl it is preferably C_{3-8}-cycloalkyl such as cyclopropyl and especially cyclohexyl.

by number of ethyleneoxy repeat units and Z is a polyamine and/or polyimine having a number average molecular weight of not less than 1500.

According to a still further aspect of the invention there is provided a compound of formula 1.



wherein R, Y, T, A, Z, x and v are as defined hereinbefore, 1-v is from 1 to v, and W is the residue of an oxide or urea.

The invention is further illustrated by the following examples wherein all references to amounts are in parts by weight unless indicated to the contrary.

Examples

Example 1 M2005 SA (1:1) PEI (13:1)

Succinic anhydride (2.5 parts, 25mmols supplied from Aldrich) was added to stirred Jeffamine™ M2005 (50 parts, 25mmols supplied from Huntsman) under a nitrogen gas atmosphere. The temperature was raised to 80°C and the mixture stirred continuously for a duration of 8 hrs. Infra red spectroscopy of the mixture showed that some anhydride groups remained. 1.7 parts of Jeffamine™ M2005 was then added to the stirred mixture which was further reacted at 80°C for 1hr. Infra red spectroscopy of this mixture showed that all of the anhydride groups had now been successfully reacted. The product was obtained as a pale yellow viscous oil (53.5g). This is Intermediate 1.

Intermediate 1 (53.5 parts) was stirred with polyethyleneimine SP200 (4.1g, ex Nippon Shokubia) at 80°C and heated to a temperature of 120°C for a duration of 6 hrs under a nitrogen gas atmosphere. After cooling to 25°C the product was obtained as an amber viscous liquid (55 parts) wherein the weight ratio of the polyether chain to PEI is 13:1. This is Dispersant 1.

Example 2 M2005 SA (1:1) PEI (17:1)

Example 1 was repeated except that the amount of polyethyleneimine was reduced to 3.15 parts. The product was obtained as an amber viscous liquid (55 parts) where the weight ratio of the polyether chain to PEI is 17:1. This is Dispersant 2.

A preferred compound of Formula (1) is wherein Y is $-CH_2CH(CH_3)O-$ and the chain represented by $(Y)_x$ may contain up to 75% ethyleneoxy repeat units.

T is preferably C_{3-4}-alkylene and more preferably $-CH_2CH(CH_3)-$ or in another embodiment $-CH_2CH_2CH_2-$.

Preferably T is $-CH_2CH(CH_3)-$ when Y is $-CH_2CH(CH_3)O-$.

The group $RO-(Y)_x-T-NH-$ is preferably the residue of a polyalkyleneoxide monoalkyl ether monoamine. Compounds of this type are commercially available as the Jeffamine™ M-series of monoamines from Huntsman Corporation. Specific examples of Jeffamine™ amines are M-600 (9,0,600), M-1000 (3,18,1000), M-2005 (32,2,2000) and M-2070 (10, 31, 2000). The figures in parentheses are approximate repeat units of propylene oxide, ethylene oxide and number-average molecular weight respectively.

When Z is the residue of a polyamine it is preferably polyvinylamine or polyallylamine. Polyallylamine and poly(N-alkyl)allylamines of differing molecular weight are commercially available from Nitto Boseki. Polyvinylamine of differing molecular weight are available from Mitsubishi Kasei.

When Z is the residue of a polyimine it is preferably poly (C_{2-6}-alkyleneimine) and especially polyethyleneimine (PEI). The polyimine may be linear or especially branched. Linear polyethyleneimine may be prepared by the hydrolysis of poly(N-acyl) alkyleneimines as described, for example, by Takeo Saegusa et al in *Macromolecules*, 1972, Vol 5, page 4470. Branched polyethyleneimines of differing molecular weight are commercially available from BASF and Nippon Shokubai. Polypropyleneimine dendrimers are commercially available from DSM Fine Chemicals and poly(amidoamine) dendrimers are available as "Starburst" dendrimers from Aldrich Chemical Company.

The number average molecular weight of the polyamine or polyimine is preferably from 500 to 600,000, more preferably from 1,500 to 200,000, even more preferably from 1,500 to 100,000 and especially from 1500 to 50,000. In the case of polyethyleneimine, the number-average molecular weight is preferably not less than 1500, more preferably not less than 3,000 and especially not less than 5,000.

The residue of dibasic acid represented by A and A^1 may be derived from any dibasic acid of formula HOOC-B'-COOH or anhydride thereof wherein B is a

direct bond or a divalent organic moiety containing from 1 to 20 carbon atoms. Preferably if A is derived from an aliphatic dibasic acid or anhydride of the given formula, then B' is fully saturated (i.e. it does not include a carbon to carbon double bond). Optionally A^1 is derived from an aliphatic dibasic acid or anhydride thereof, then the B' used for A^1 is fully saturated. B' may be aromatic, hetero aromatic, alicyclic or aliphatic which may be optionally substituted. When B' is aliphatic containing two or more carbon atoms, it may be linear or branched, saturated (as earlier expressed saturated is preferred, especially for B' units going into A) or unsaturated. Preferably B' is unsubstituted. It is also preferred that B' contains not greater than 12 and especially not greater than 8 carbon atoms. Unsaturated aliphatic B' units (such as used to make maleic anhydride) have been associated with highly gelled reaction products under some reaction conditions.

When B' is aromatic it is preferably phenylene, when B' is alicyclic it is preferably cyclohexylene and when B' is aliphatic it is preferably alkylene. Preferred dibasic acids are terephthalic, tetrahydrophthalic, methyl tetrahydrophthalic, hexahydrophthalic, methyl hexahydrophthalic, trimellitic, C_{1-20}-alkenyl or alkyl succinic and especially maleic, malonic, succinic and phthalic acids. Preferred anhydrides are glutaric, succinic and phthalic anhydrides.

Mixtures of dibasic acids or anhydrides thereof may be used. Thus A may be the residue of one or more than one different dibasic acid or anhydride. However, it is preferred that A is the residue of a single dibasic acid or anhydride. Similarly, A^1 may be the residue of one or more than one different dibasic acid or anhydride. Again, it is preferred that A^1 is the residue of a single dibasic acid or anhydride. It is also preferred that both A and A^1 are the residue of the same dibasic acid or anhydride. It is much preferred that A and/or A^1 is the residue of succinic anhydride.

When W is the residue of an oxide any of the amino or imino groups in Z which do not carry the group RO-$(Y)_x$-T-NH-A- may be converted to a N-oxide by reaction with oxygen (including air) or a peroxide such as hydrogen peroxide or ammonium persulphate.

Similarly when W is the residue of urea the number of free amino and/or imino groups in Z which are reacted with urea may vary over wide limits up to the